ILLUSTRATIONS

OF

SOME MODES OF DEATH AFTER OVARIOTOMY

BY

JOHN D. MALCOLM, C.M., F.R.C.S.Edin.

SURGEON TO THE SAMARITAN FREE HOSPITAL

[*From Volume 78 of the 'Medico-Chirurgical Transactions'*]

LONDON

PUBLISHED BY THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY OF LONDON,

AND SOLD BY H. K. LEWIS, 136, GOWER STREET, W.C.

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[illegible] AND SON, PRINTERS, [BARTHOLOMEW CLOSE, E.C.

PRICE; ONE SHILLING, Nett.

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Received December 1st, 1894—Read January 8th, 1895.

In the study of surgical procedures it is sometimes advantageous to discuss the methods of operating, and the principles which should guide our treatment, whilst at other times it is more instructive to relate cases, and to endeavour to show how success has been obtained, or how failure might have been avoided. Discussions on the methods of ovariotomy have been so frequent, and I have expressed my own views regarding them so fully, that I now propose to have recourse to the second plan.

I need not, however, on the present occasion report cases in illustration of the successful application of the views on the condition and management of the intestine after abdominal section which I first published in 1887, and which have the honour of being recorded in our Society's 'Transactions.'[1] In that year I drew attention to the fact that symptoms of obstruction and paralysis of the bowel had often been mistaken for those of peritonitis after operations on the abdomen, and notably that the cases of peritonitis which Mr. Lawson Tait professed to

[1] Vol. lxxi.

cure by purgatives were not cases of peritonitis at all. I mention Mr. Tait because he has declared that he has been "grossly misrepresented and misunderstood" in this matter, and that he "has never said that the purgative treatment will cure peritonitis."[1] As this statement has recently been brought prominently forward before the Medical Society,[2] I take the opportunity of pointing out that the exact words of Mr. Tait against which I argued were these:—"Now we beat the peritonitis. On the slightest indication of peritonitis after an ovariotomy we give a rapidly acting purgative, it matters not what, the patient's bowels are moved, and the peritonitis disappears."[3] My contention was[4] that the symptoms here referred to by Mr. Tait as indications of peritonitis were not due to this cause, that peritonitis did not exist in these cases, and consequently that peritonitis could not disappear,—a view with which Mr. Tait seems now to agree so fully that he has forgotten that he ever held any other.

I could give numerous cases showing success following attention to this matter, but there is abundant evidence in recent literature that the condition and the management of the intestines after abdominal section are now receiving ample attention on the lines which I suggested, and that a recognition of the importance of this matter is leading to a very marked improvement in the success of abdominal surgery.

Under these circumstances, and remembering the adage that we learn more from our failures than from our successes, I propose to relate in this paper the histories of all my cases in which death has been caused by operations for the removal of new growths of the ovary. But before doing so I should like to allude to certain cases in

[1] 'Brit. Med. Journ.,' 1892, vol. ii, p. 1050.

[2] "Lettsomian Lectures," 'Med. Soc. Trans.,' 1894, p. 178.

[3] 'Brit. Med. Journ.,' 1886, vol. i, p. 921.

[4] "The Condition and Management of the Intestine after Abdominal Section," 'Med.-Chir. Trans.,' vol. lxxi.

which I refused to operate on patients who, I believe, had tumours developing primarily in ovarian tissue. In publishing records of ovariotomy, surgeons not infrequently assert that they have made no selection of their cases for operation,—a statement that always surprises me exceedingly. It is a fact that some ovarian tumours are so malignant in their nature that before they are discovered they have infiltrated the tissues of the broad ligament in a manner that renders their successful removal impossible, so that no wise surgeon would make the attempt. It would really be a matter of extraordinary good fortune if an operator of any experience had never been called upon to refuse a case as malignant. If, however, he has declined to operate on account of this condition there is a question of diagnosis, and there may be room for a difference of opinion, because, without doubt, many cases of ovarian growth which it is difficult and dangerous to take away may simulate those cases having tumours of an irremovable malignant character. Thus mistakes sometimes occur, and I have to record two, in cases No. 3 and No. 6, and a third by another operator in my second fatal case. I have also notes of three cases in which I diagnosed ovarian tumours that could be removed, and I wished to perform exploratory operations, but in which my opinion was overruled. In one of these cases an ovariotomy was successfully performed by another surgeon. In the second case an ovarian tumour was found after death, but whether it could have been successfully removed is uncertain. In the third case there was neither operation nor post-mortem examination.

I have declined to operate in two cases of large nodular fixed tumours which probably originated in ovarian tissue. In both cases the peritoneal sac was distended with free fluid, and there was double pleuritic effusion, whilst in one of them the growth was fungating into the vagina at the site of a tapping puncture that had been made some time before I saw the patient. In a third patient on whom I refused to operate there was a cystic abdominal

growth, apparently ovarian, with solid deposit in the parietes, enlargement of the inguinal glands to the size of walnuts, infiltration of the left broad ligament, and complete fixation of the uterus. In a fourth case I successfully removed an ovarian tumour from a woman aged thirty-six years, on March 17th, 1892, and found no reason for taking away her second ovary. Within a year she was nearly as big as before the operation, but she did not consult her medical attendant, Dr. Alexander, of Epsom, till she got an extensive catarrhal pneumonia of both bases. I saw her at this time, and diagnosed another ovarian tumour, but I did not think there was any possibility of successfully removing the growth unless the condition of the lungs improved. The tumour was evidently, as the first had been, very multilocular, with no cysts of any great size, so that there was no advantage to be expected from tapping. The lungs did not improve, and the patient died on April 6th, 1893. Her tumour would have been removable with every prospect of success if advice had been sought sooner. In another case I removed a papillomatous tumour of the right ovary containing much solid matter, on May 12th, 1891. The second ovary seemed unaffected, but two years later, on May 4th, 1893, the patient had a tumour about the size of a cocoa-nut implicating the uterus. I declined to operate because the patient was over sixty years of age and very feeble, and I did not think the tumour could be successfully removed, even if she had been young and strong. She died in July of the same year. As far as my recollection goes, aided by my notes, these are the only cases of ovarian tumour in which I have refused to operate.

In dealing with cases of doubtful nature and unusual difficulty, I endeavour, in the first place, to determine whether there is any possibility of successfully removing the tumour by operation. If this seems at all feasible, I explain clearly to the patient the position in which she is placed, the danger that death may be an immediate con-

sequence of the operation, and the certainty of a fatal issue unless the tumour is removed. If the patient then wishes me to operate, I consider it my duty to undertake the responsibility of doing so even if the chances of success appear very small.

My first fatal case was that of a single woman, twenty-three years of age, placed under my care by Mr. Knowsley Thornton and Mr. Willans of Much Hadham. About three months before I saw her she had been suddenly seized with pain, vomiting, and an unnatural discharge from the bowels. The abdomen at the same time diminished in size, a considerable enlargement having taken place without being observed. Mr. Willans was not immediately called in, and when he saw the patient he at once arranged for her admission to the Samaritan Free Hospital, where she was received on March 7th, 1891. She was then extremely emaciated, her abdomen was greatly distended by flatulence, the pulse was rapid, and the temperature varied between 100° and 103·4°,[1] but the discharge from the bowel had ceased. After eighteen days' treatment the flatulent distension had almost gone, and a tender tumour was discovered filling the pelvis behind the uterus and reaching to about two inches above the pubes. The temperature now ranged below 101°.

On March 25th, 1891, I removed through a median incision a cystoma of the right ovary containing about two and a half pints of extremely offensive dermoid material. The tumour was extensively adherent to surrounding structures, and at one point was so closely connected with the sigmoid flexure that I had to leave a portion of the cyst wall on the bowel. I made a second opening in the left groin, where this part of the bowel lay naturally against the anterior abdominal wall, and fixed the remaining piece of cyst in this opening outside the peritoneum, so that any discharges from it could escape freely. I

[1] All the temperatures recorded in this paper are Fahrenheit and were taken in the vagina.

drained the peritoneal cavity through the median incision, taking great care to keep apart the dressings and the discharges of the two wounds. When put to bed the patient was very weak. The temperature quickly rose to 101·8°, and then tended downwards. The pulse rose to 140 and continued fast. In other respects the condition was not unsatisfactory for the first two days; flatus passed freely from the rectum, and on the second day the bowels moved spontaneously. The discharge from the wounds was scanty and odourless. Early in the morning of the third day flatus did not escape at all freely when the rectal tube was inserted, and there were colicky pains on the right side. In the afternoon of this day the groin wound became very offensive, the temperature was 101·4°, and the pulse 144. In the evening the bowels again moved spontaneously, and the temperature fell to 100°. On the fourth morning the temperature was 100·8°, the pulse was 130, and there was occasional vomiting with slight distension of the abdomen, which latter diminished after the bowels were again moved by three small (ʒj) doses of sulphate of magnesia. After this very little flatus escaped from the bowel. Towards evening the distension increased, vomiting was frequent, the urine became scanty, the temperature rose to 103·8°, and the patient died very early on the fifth day after the operation. The discharge from the drainage-tube was clear, scanty, and odourless to the last.

At the autopsy, which Mr. Stephen Paget kindly made for me, there was very little fluid in the pelvis, and no sign of general peritonitis. The small intestine was adherent, near its lower end, to the stump of the pedicle on the right broad ligament. The bowel was acutely bent, and completely occluded at the point of adhesion, but otherwise healthy. Suppurative peritonitis had spread from the groin wound, but the neighbouring coils had become adherent, so that the inflammatory action was strictly localised. It was found to be impossible to separate the piece of cyst wall from the bowel.

In this case the occlusion of the intestine caused by its adhesion to the broad ligament, unless it had been relieved by operation, or by some chance alteration in the position of the adherent gut, would certainly have brought about the death of the patient under any circumstances. I have recorded a case[1] in which, in a strong healthy woman, an exactly similar condition developed, and was the only abnormality found after death. Had it not been for this accident, I am of opinion that a successful issue would have taken place. It is quite clear that the septic extension from the wound in the left groin did not begin till after the signs of obstruction became obvious. I have shown in other publications[2] that obstruction of the intestines has a most pernicious influence on any co-existing inflammatory condition ; and, on the other hand, a piece of cyst wall fixed as in this case outside the peritoneum, without tension, might fairly have been expected to give rise to no trouble if there had been no further complication.

The second fatal case was that of a widow, forty-six years of age, whose abdomen was tapped about fourteen times between November, 1880, and January, 1892. In the spring of 1891 a tumour was discovered, and the obstetric physician to one of our large hospitals opened the abdomen, but did not attempt to remove the growth. In January, 1892, the patient came to the Samaritan Free Hospital, and consulted Dr. Rutherfoord, who was strongly of opinion that another operation ought to be performed, and asked me to do it, at the same time informing me that a well-known abdominal surgeon had declined to undertake the case. I admitted the patient, and after removing by aspiration twenty-six pints of clear amber-coloured fluid from the abdominal cavity, I

[1] "On some Complicated Cases of Abdominal Section," 'Lancet,' July 18th, 1891.

[2] "The Physiology of Death from Traumatic Fever." "The Condition and Management of the Intestine after Abdominal Section," 'Med.-Chir. Trans.,' vol. lxxi.

easily defined a tumour rising to about two inches above the navel. It surrounded and was firmly fixed to the uterus, but the mass moved very slightly in the pelvis, which it nearly filled. The sound passed two and a half inches through the os uteri towards the middle of the growth. In answer to my inquiries, the surgeon who had done the exploratory operation kindly wrote that he had "performed abdominal section, but could do nothing, as there was extensive malignant disease (probably papilloma of ovary), and involving omentum and intestine." The general health of the patient was, however, still good when she came into my care about a year later; the tumour seemed to me removable, and of course it is known that ovarian papilloma is not necessarily malignant. I therefore asked Mr. Knowsley Thornton to see the patient in consultation, and with his approval I agreed to her urgent request that I should attempt to take away the growth.

I operated on March 14th, 1892, when the abdomen was again moderately distended. I had ordered that the urine was to be drawn off before the operation. This had been done without difficulty before the patient was tapped, but now two nurses tried and failed to pass a catheter. They decided to say nothing about the matter, and the consequence was that I cut into the enormously distended bladder,—an accident of which I have seen and heard so much, and which may so easily happen, that I have always been particularly anxious and careful to avoid it. In this instance I thought the bladder was quite safe, for I began by making a small incision near the umbilicus. Having emptied the bladder and closed the aperture with forceps, I opened the peritoneal cavity, and when a large quantity of fluid had escaped, a multilocular cystic tumour, almost completely covered by fungating papillomatous growth, was seen filling the pelvis and rising above the level of the umbilicus, adherent everywhere except on its anterior aspect, where it had been in contact with the free fluid. Its size having been reduced by tapping the

larger cysts, the separation of adhesions was begun, and it is to be noted that the adherent papilloma came completely away, leaving no sign of infiltration or extension into neighbouring parts. The growth filled Douglas's pouch and the space in front of the uterus, surrounding also the right broad ligament from which it grew, and its base was so solid that there was great difficulty in getting at the pedicle. By freely breaking up the tumour and tearing off large masses of papilloma, I was, however, able to expose and tie the broad ligament. These proceedings gave rise to much hæmorrhage from the tumour itself, and from numerous bleeding points of adhesion. When the tumour was removed and the bleeding was arrested I found that the broad ligament had not been divided sufficiently low down to permit of the complete removal of the neoplasm. I therefore transfixed and ligatured afresh beyond the disease, and owing to the shortness of the pedicle I had to tie the knots very tightly to avoid the danger of slipping of a ligature. A small pedunculate growth was removed from the top of the left broad ligament near the uterus. The left ovary was not enlarged, but it and the Fallopian tube were bound down by old adhesions. I now observed a condition of intestines which I have not seen in any other case. There was no small gut in the pelvis, nor in front of the spinal column. The intestines were all tucked away in the upper part of the abdomen and in the loins, and were fixed thus by firm adhesions of the mesentery and of the gut itself. The only free portion of the bowel was the sigmoid flexure, which had been attached to the tumour, and which now hung down very awkwardly in Douglas's pouch. A drainage-tube was placed in the pelvis and the incision was closed, the sutures being arranged over the bladder wound so as to avoid all possibility of escape of urine into the peritoneal cavity. As a further precaution, a Skene-Goodman catheter was placed in the urethra, the bladder was drained for three weeks, and it never gave any trouble.

The after history of this patient was in many respects similar to that of the first case, only it was prolonged for thirty-five days. She quickly recovered from the operation, and her condition gave no cause for anxiety during the first week, the highest temperature and pulse being 101·8° and 116 respectively. Urine was secreted abundantly, and soon became clear. Flatus passed downwards early, and there was no distension. The drainage-tube discharged between six and seven ounces of fluid in the twenty-four hours. A frequent cough seemed to be causing the tube to irritate the peritoneum, and I therefore removed it on the fourth day. On the sixth day the cough was much better, and expectoration was easier ; the temperature was 99°, and the pulse 84 in the morning. During the second week the bowels were opened daily, or every second day, by enema or by laxative medicine. There was now, however, some distension in the lower abdomen, the edges of the wound became red, and the temperature varied between 99·6° and 101·6°, the pulse being between 86 and 100. The wound had healed by first intention, except superficially where the skin edges had not been exactly apposed, especially at the part where the drainage-tube had been fixed and over the bladder opening. On the sixteenth day the wound was completely healed and free from all signs of irritation. During the night between the sixteenth and seventeenth days no flatus passed from the anus, the patient suffered much pain, her abdomen became greatly distended, the temperature rose to 103°, and the pulse to 116. A turpentine enema caused a slight movement of the bowels and a free passage of flatus, with great relief of pain and diminution of the distension. The temperature fell by the following evening to 100·2°, and the pulse to 96. From this time there was frequent difficulty from retention of flatus, and the abdomen gradually increased in size, but the temperature was only once recorded above 101·2° for a few hours, on the twenty-fifth day, when it rose to 103° in the vagina. On the twenty-fourth day vomiting set in, and was at first very occasional, but

became more frequent later. On the thirty-third day the lower abdomen to about two inches above the umbilicus had become very hard and greatly enlarged, and as the wound had stretched it had again become red and irritable. Douglas's pouch was also distended and hard, and the rectum was found to be on the right side of the pelvis. It was obvious that the patient would soon die if left alone, but as she had endured so much, and still had considerable strength, I determined to seek for and attempt to relieve the obstruction which seemed to exist. The patient, who since the operation had always been quite sensible, told me to do whatever I thought best. Sir Spencer Wells saw her with me, and agreed with my view of the case. I therefore reopened the abdomen on the thirty-fourth day after the first operation, and found that the distension was due to an enormously enlarged and convoluted sigmoid flexure, the coils of which were matted together and adherent to everything they touched. The portion of the right broad ligament which was beyond the ligatures had sloughed, and was represented by a greyish stringy substance which lay in a cavity that it seemed exactly to fit. The ligatures were with it, and appeared as fresh as when tied. There was about an ounce of serous fluid in the upper part of the abdomen, but otherwise the peritonitis was altogether adhesive. The small intestines were exactly as at the first operation. I freed the adhesions of the sigmoid flexure completely, and attempted to release the small intestine, but with little effect. The peritoneal cavity was washed with boiled water and drained.

The patient was put to bed with a temperature of 101·8° in the vagina, and a pulse of 120, and she quickly recovered from the anæsthetic. Two ounces of clear urine were drawn off by catheter three hours after the operation, and one ounce after three hours again. The patient was quite conscious and sensible for a few hours, but later she became violently delirious, and she was still so strong that it required considerable exertion on the

part of two nurses to keep her in bed. The temperature gradually fell to 97·6°, the pulse rose, and death followed fourteen hours after the second operation. No sign of malignant disease was found at the sectio cadaveris.

The adhesions of the intestine in this case seemed to me to be due to inflammation caused by the irritating fluid to which the peritoneum had been exposed so long, owing to the delay in removing the tumour that had unfortunately taken place. The greater part of the intestinal tract could not expand, and the sigmoid flexure was therefore left without the natural support of the small intestines. When the patient began to take food by the mouth, the sigmoid flexure became distended, and being adherent in the pelvis, became convoluted, and gave rise to an incomplete obstruction.

It is, of course, possible to argue that the sloughing of the distal portion of the pedicle was the cause of the adverse symptoms. It is, however, most unlikely that the strangulated portion of the broad ligament would live for a time and then die. All the conditions were favorable to its complete recovery if it survived the first few days. In a very short time the ligatures would yield a little, the pedicle itself would shrink, and adhesions would form. I had been obliged, however, in this case to cut the pedicle very short, and tie it as tightly as I could, in order to get the growth away and avoid the possibility of slipping of the ligature. There is, therefore, a strong presumption that the ligature was too tight, and that the slough had existed from immediately after the operation. But the first signs of real danger did not appear till sixteen days later, whilst there was no sign at all for nine days. Moreover at the second operation the slough had a stringy appearance, as if its softer parts had already been absorbed. There is no doubt that aseptic organic matter in the peritoneal cavity may be absorbed, and absorption, if it ever occurs, might have been expected to take place in a patient possessed of the remarkable physical and healing powers exhibited in the case under consideration. It

seems clear that the slough was not septic, for, if it had been, an extensive pus formation must have taken place. For these reasons it seems to me that if the obstruction from extreme dilatation of the sigmoid flexure had not occurred, the condition of the pedicle would never have been known or suspected.

The unfortunate accident to the bladder cannot be considered in any way the cause, or even a contributing cause, of the fatal issue in this case.

The third case was sent to me by Dr. Searson, of St. Peter's Park, in July, 1892. The patient was thirty-one years of age and had been married only a few months.

I diagnosed a small ovarian tumour, not rising out of the pelvis, and closely attached to the uterus as if by a short pedicle, or growing in the broad ligament. As the Samaritan Hospital was about to close for the annual cleaning, I told the patient and Dr. Searson that she must wait till October or seek advice elsewhere. It was decided to wait, and the more readily because the patient's husband—a sailor—was expected home about October. I did not think the delay would hurt the patient, but the development of the tumour was extremely rapid. When I saw her on admission to hospital, a tense, smooth, tender growth greatly distended the abdomen, which was dull on percussion as high as the umbilicus, the intestines being pushed upwards and forwards, so that the limits of the tumour above were not definable. Fluctuation was distinct over the whole of the dull area and to some distance beyond it. The uterus was of normal size, was dragged or pushed up into the lower abdomen, and was easily felt through the abdominal wall immediately above the pubes, being held prominently forward by the new growth. The pelvis was distended by a large, smooth, tender mass, in which fluctuation was distinctly felt on tapping the abdominal wall. The pulse varied from 120 to 144. The temperature was usually subnormal in the mornings and from

100° to 101° in the evenings. The patient was otherwise healthy, but extremely emaciated and feeble. I thought the tumour was an ovarian cyst, probably extensively adherent. After consultation with my colleagues it was decided that the best chance of saving the patient's life was given by removing the tumour at once. If this proved impossible I thought I could at least give relief by emptying and draining the cyst. When I opened the abdomen I found a condition that had not been suggested by anyone who had examined the patient. The tumour was a soft solid, adherent to the abdominal wall. As there was absolutely no hope for the patient if I stopped the operation at once, and there might be some possibility of success if the adhesions happened to be limited to the anterior wall of the abdomen, I enlarged the wound and tried to get the tumour out. It had, however, no more consistence than a fresh blood-clot; its capsule was only very slightly firmer in texture than the bulk of the growth, and it was universally adherent, the adhesions being stronger than the substance of the tumour, so that when I attempted to separate the growth, pieces of it remained sticking to the bowels and abdominal wall. The tumour filled the pelvis and rose above the costal margins. It grew from the right ovary, and its base was of slightly firmer texture than the other parts of it. I tied the broad ligament below the growth and divided it beyond the ligature. Some masses of omentum were also removed, the chief bleeding points were tied, and large quantities of the growth were scooped out. I then closed the wound, knowing that I had only removed a portion of the tumour. The patient died under the shock of the operation.

At the autopsy much new growth was found in the pelvis and sticking to the omentum and intestines, which were matted together by adhesions. The mesenteric glands were, "with very few exceptions, not enlarged," and there were no secondary growths in any of the viscera. The left ovary contained two cysts, one the

size of a walnut, the other much smaller, being a dermoid cyst. The rest of the body was healthy, but very anæmic.

I do not know how the condition which existed in this case is to be diagnosed. The use of an aspirating needle would certainly not have revealed the solid nature of the tumour. The extreme rapidity of growth and the corresponding debility were marked features of the case, but could scarcely be called pathognomonic. Of course if a correct diagnosis had been made, no operation would have been performed, but the physical signs exactly simulated those of an adherent cyst.

The fourth case was that of a woman thirty-three years of age, who consulted Mr. Thornton in 1886, on account of a fibroma of the uterus reaching nearly as high as the umbilicus. An operation was not then considered necessary, and the patient was fairly comfortable till March, 1893, when she again sought advice because the tumour was rapidly increasing in size, and Mr. Thornton sent her into the Samaritan Free Hospital under my care. She had a large tumour extending into and expanding the cervix uteri, which was low in the pelvis. The growth reached four inches above the umbilicus, and fluctuation was distinct in the upper part, but just above the pubes and in the left groin the tumour seemed solid, and was very tender. The other organs of the body were all healthy, but anæmia was extreme. An ovarian tumour complicating the fibroma was diagnosed by Mr. Thornton.

I opened the abdomen on May 1st, 1893. The cystic and solid parts of the tumour formed one mass, the cyst being a tumour of the right ovary, inseparable from a uterine fibroid tumour over a large extent of their contiguous surfaces. The sigmoid flexure and cæcum were raised high up on the back of the enlarged womb, and on the left side there was another ovarian cystoma, the size of a small cocoa-nut. After a little enucleation on the right side both broad ligaments were tied and divided below the ovarian tumours. I then made an incision through the

peritoneum above the sigmoid flexure and cæcum behind, and above the bladder in front, so as to enable me to push these organs and the tied proximal portions of the broad ligaments downwards. I was thus able to get at and enucleate the base of the fibroid which extended very deeply into the left broad ligament. The iliac artery and vein on that side were exposed for some inches, and numerous vessels bled feeely, but the cavity was stuffed firmly with sponges which arrested the hæmorrhage until I got the wire of a serre-nœud tightly secured round the base of the tumour, and cut it away, leaving little if any of the body of the uterus below the wire. The sponges were then removed, and the hæmorrhage was stopped, but the bleeding points had to be secured very carefully, for many of them were close to the iliacs, and the exact situation of the ureter was not discovered. The pedicle was fixed outside the abdomen in the lower angle of the wound, and the incision was closed with silk sutures.

The patient at first gave little or no cause for anxiety. The highest temperature in the first week was 102° F. on the night following the operation. The pulse was between 80 and 90, but very excitable, running up immediately to about 120 if the patient made the slightest exertion or saw a stranger. Flatus passed downwards freely after the first twelve hours, and there was no pain and no abdominal distension. The urine was abundant and free from albumen. The bowels were moved on the fifth day, after one drachm of sulphate of magnesia had been given. The lower bowel then became somewhat irritable. The patient once or sometimes twice daily would have a strong desire to defæcate, with forcing pain, but no power of expulsion. In this condition a small enema produced an evacuation of the bowels, and the patient was for the time quite comfortable. The lower end of the wound was dressed daily after the fourth day, and the separation of the slough seemed to go on in a perfectly satisfactory manner. On the eighth day the temperature rose from 100·6° to 103·2°, and the

pulse to 128. There was at this time nothing unhealthy to be seen about the wound; the patient was absolutely without pain, and said she felt very well. The urine had become alkaline and offensive, and this was the only condition I could find that seemed to account for the rise of temperature. After the application of ice to the head the temperature came down, and next morning it was 100·2°, the pulse being 96. Dilute nitric acid was given, and the urine quickly became acid again. The temperature gradually descended, and on the eleventh evening the highest was 100·8°, while next morning it was 99°. The pulse came down to 84, but was still very excitable. I had now no fault to find with the condition of the patient, except that she was very anæmic, which seemed to account for the pulse condition, and that the lower bowel was still irritable. The wound looked healthy, the wire round the pedicle was quite loose, and was removed without any difficulty on the eleventh morning. On the morning of the twelfth day the patient said she was very comfortable. The skin, which had been rather dry since the operation, and which the patient said seldom acted much, was decidedly moist. I noted this and thought it curious, but, with the other conditions as satisfactory as they seemed, it caused me no alarm. In the early afternoon the patient's respirations became very hurried,—over 50 to the minute; the pulse rose to over 120, and she complained first of pins and needles, and later of extreme pain in her left leg, which quickly became swollen. The unfavorable symptoms rapidly increased in severity, the patient passed into a state of collapse, and died at 8 p.m. on the twelfth day after the operation. The temperature at the end did not rise above 99·6°.

At the autopsy there were found slight recent adhesions in the immediate neighbourhood of the operation wound, but there was no lymph and no fluid in the peritoneal cavity. The pin supporting the stump of the uterus outside the abdomen had been removed after death,

and the pedicle had dropped down into the pelvis, the left iliac vessels being exposed. The vein was distended with clot, and contained bubbles of gas. The right side of the heart was distended with soft plum-coloured post-mortem clot containing a few bubbles of gas. The lungs were "remarkably bloodless, but otherwise normal."

This death was more directly due to the hysterectomy than to the ovariotomy, but as it was the ovarian tumours that necessitated the operation the case comes under the title of my paper. Phlegmasia dolens after an ovariotomy is not a very rare complication, but this is the only fatal case that has occurred in my own practice, and I do not remember having seen any fatal case in Mr. Knowsley Thornton's hospital work during the seven years that I assisted him in it. When the abdomen is completely closed the iliac veins may become plugged without any warning whatever, and without any indication that septic mischief exists. In the case I have just related, it, however, seems evident that septic contamination spread directly from the sloughing uterine stump to the iliac vein.

Before this case occurred I had been in the habit of clipping away the sloughing pedicle as quickly as possible, but now I always let the parts separate with very little interference and few dressings. The exact adjustment of the peritoneum of the anterior abdominal wall round the stump of the pedicle behind the serre-nœud wire is the most important factor in preventing such fatalities, but when the broad ligament has been extensively opened up there is necessarily great difficulty in securing the parts satisfactorily.

The next patient was sent to me by Mr. Manley Sims. She was a single woman, sixty years of age, in whom menstruation had always been free, but had never given any trouble. It ceased at the age of forty-six, but at the age of about fifty-four and since then she had had a discharge, sometimes red, sometimes pale, and sometimes of a dirty-brown colour and offensive. Otherwise the

patient was a healthy active woman till the end of June, 1893, when an enlargement of the abdomen was first noticed. It increased rapidly, and was accompanied by pain, constipation, and emaciation. When I first saw the patient on August 28th, 1893, the abdomen was greatly distended, the skin over it was tense and glistening, and the superficial veins were enlarged. The parts were soft above, but resistent around and below the navel. The note on percussion was resonant in the loins and upper abdomen, but dull anteriorly, and the dull area moved very slightly with changes in the position of the patient. Through the vagina a hard nodular tumour was felt, filling the pelvis, firmly fixed, and pushing the parts very low down. The cervix admitted about half an inch of my forefinger ; it felt soft and friable, and immediately above and behind it there was a very hard protuberance, about the size of a walnut, standing out from the main growth. I did not attempt to pass a sound, as it seemed quite as likely that I might push it through diseased tissues as into the cervical and uterine canals. I believed that the patient had advanced malignant disease of the uterus, a growth, probably also uterine, in the lower abdomen, and a large quantity of fluid free in the peritoneum. Mr. Sims, who had seen the patient twice before, felt sure that there was an ovarian tumour in addition to the uterine condition. An exploratory operation was therefore performed in a nursing home on August 31st, 1893, when I found and removed a very friable, multilocular, ovarian tumour, which had numerous small cysts with much solid matter between them. The solid part weighed three pounds. It had a rather wide attachment to the right broad ligament, and was floating in a large quantity of thick glutinous fluid that had exuded from its surface. Twelve pints of this were measured, but much was lost. The uterus nearly filled the pelvis, and rose about two inches above the level of its brim. It had grown into and expanded the left broad ligament, and its outline was smooth, rounded, and

soft, with numerous hard nodular places felt in its walls, but these did not project. The left tube and ovary were healthy, but bound down by old adhesions. As much as possible of the ovarian fluid was removed, and the abdomen was closed without drainage. For the first four days after the operation the highest temperature and pulse were respectively 101·2° in the vagina, and 106 to the minute. On the evening of the third day there were some abdominal pain and distension, both of which were removed by an action of the bowels following an enema on the fourth morning. The skin and kidneys acted freely, the vaginal discharge was slight and not offensive, and the patient slept well at intervals. On the afternoon of the fourth day the vaginal discharge ceased; the temperature, which had been 100·2° in the morning, rapidly rose, and the patient had a severe rigor commencing at 1 a.m. on the fifth day. An hour and a half later the temperature was 104·8°, and the pulse was 140. Soon after the rigor ceased I dressed the wound, which was quite free from any sign of irritation, the abdomen being soft and flat. I attempted to pass sounds and catheters of various shapes into the uterus, but failed to do so. Shortly after this, however, the uterine discharge returned, and the temperature fell to 100·6°, and the pulse to 112, nine hours after the beginning of the rigor. The remainder of the fifth and the first half of the sixth days were passed without trouble, the patient's condition being greatly improved, but in the afternoon of the sixth day the uterine discharge again ceased, and the patient had another attack similar to that just described, except that there was no rigor. All my efforts to pass an instrument into the uterus failed, and on this occasion the discharge did not return. Flatus ceased to pass downwards, the abdomen became distended, the patient became delirious, and she died at 8 p.m. on the seventh day after the operation, the temperature being then 108°.

At the post-mortem examination there were signs of

very slight general adhesive peritonitis, with intestinal distension, but there was no exudation of fluid or of visible lymph from the peritoneum. The uterine cavity was dilated, and contained ten or twelve ounces of mucopus, its lining membrane being much thickened. In its walls there were two old hard fibroid tumours as large as Tangerine oranges, and many others of smaller size. None of these caused any prominence on the peritoneal surface of the uterus, but most of them bulged into its cavity, which thus had a very irregular outline. One fibroid was outside the uterine substance low down in the left broad ligament, whilst another was in the posterior wall of the cervix, and had evidently been the chief cause of the dilatation of the womb, and of the difficulty in passing an instrument through the cervical canal. If I had not been under the impression that the uterine disease in this case was malignant, I should probably have made a more determined effort to find, or make a way into the uterus after the rigor, and free drainage might have saved the patient's life, but I did not know that there was such a considerable cavity in the womb, and to apply any great force to a malignant uterine growth would have been to jeopardise any chance of recovery that existed. The conditions found were new to me.

The last of these patients was sent to me by Mr. Knowsley Thornton and Dr. Boyce of Maidstone. She was thirty-nine years of age, and she had first noticed a lump "like a ball" in her abdomen in 1889. This gradually enlarged, and when I saw her in 1891 it had been growing more quickly for a few months. There was a large fluctuating oval tumour in the right side rising out of the pelvis well above the level of the umbilicus, and reaching a little beyond the outer edge of the rectus muscle on the left. Attached to the lower portion of this tumour, in the left groin, below the level of the anterior superior iliac spines, was a hard nodular swelling, the whole being firmly fixed. The cervix was very high and far forward in the pelvis,

the os being almost out of reach. The fundus was not definable. Behind the cervix a hard rounded mass distended the pelvis far below the os uteri, down nearly to the anus. I diagnosed an ovarian tumour opening up the broad ligaments, or possibly a cystic fibroma of the uterus.

On November 24th, 1891, I opened the abdomen, and found that the bulk of the tumour had the colour of a healthy uterus, and appeared to be an enlargement of that organ. I did not feel certain whether it was a very soft fibroid or a cystic growth. The mass in the left groin also appeared to be uterine. It was within the broad ligament, was covered by very large veins, and was of stony hardness. There were several small nodular growths under the peritoneum of the anterior abdominal wall, and the glands along the brim of the pelvis on the left side were distinctly enlarged. I came to the conclusion, and Mr. Doran, who was assisting me, agreed that the tumour was a malignant uterine growth and irremovable. I therefore immediately closed the incision without investigating the position of the ovaries or the posterior connections of the tumour, as this would have necessitated a considerable enlargement of the wound.

There was no trouble during convalescence, and the patient went home on the eighteenth day. The general condition and the state of the bowels were much improved for a time, and when I saw the patient four months later the abdominal measurements were smaller than they had been before the operation, the pain also being relieved. This diminution in size and absence of pain were, I think, due to an improved condition of the bowels. The patient continued fairly well for about eighteen months, but her abdomen gradually enlarged and she became weak and thin. About June, 1893, she increased rapidly in size, and again suffered from attacks of severe pain. About this time, as she informed me, she was told by a medical man that there could be no difficulty about removing her tumour, and no doubt that she would get well if this were done. She therefore asked Dr. Boyce

and me to reconsider her case, and she was again admitted to the Samaritan Free Hospital in October, 1893. The tumour had then the same shape as before, but it was much larger. The main part fluctuated distinctly. It reached above the costal margin, and well over to the left side, its upper end being almost central in position, whilst the smaller portion on the left side had risen nearly up to the level of the umbilicus. The superficial glands in the left groin were slightly hypertrophied. In the pelvis the growth was larger and even lower down than before ; the cervix uteri was quite out of reach of the finger. I could not feel any of the subperitoneal nodules that were found at the first operation except one, which was close to the old scar. The superficial veins in the left groin were slightly enlarged. The general condition of the patient was, however, altogether inconsistent with the view that the tumour was a malignant one. I therefore determined, after consulting Mr. Thornton and other colleagues, and with their approval, to take away the tumour if possible. The patient was extremely anxious to have this done, although the very serious nature of the operation was put before her in the clearest language.

On October 25th, 1893, I reopened the abdomen, a cystic growth the size of a bean in the scar of the first wound being cut into and excised. Some slight adhesions to the anterior abdominal wall caused by the first operation were easily broken down with the finger. There were no other adhesions of the peritoneum, but this membrane was reflected from the tumour to the abdominal wall about two and a half inches above the pubes in front, well above the promontory of the sacrum behind, and correspondingly high at the sides, so that the whole of the pelvic peritoneum and part of the peritoneum of the lower abdomen had been separated from its proper connections by the new growth below it. There was no line of demarcation either as regards colour or form between the right tumour and the front of the uterus, of which it still seemed to be an enlargement. The

growth on the left side had now, however, all the appearances of a thin-walled ovarian cyst, completely covered over by the broad ligament. Its anterior surface was continuous with the larger muscle-coloured growth, the limits of the two in front being marked by the colour alone, and a shallow sulcus separating them above. I tapped the larger growth, which had walls quite half an inch thick, and contained opaque yellowish-grey fluid. When reduced in size the growth was brought outside the abdomen, but the thick cyst-wall would not collapse sufficiently to allow of this till I made the ventral incision about eight inches long. The full extent of the base from which the tumour had to be enucleated was now seen. After dividing the peritoneum the growth was shelled out of the right broad ligament, but this was not easily done, as, although it did not go deeply into the pelvis, the tumour was attached so firmly to the neighbouring structures by strong bands of connective tissue that a knife or scissors had to be frequently used. The smaller cyst on the left side extended very deeply into the pelvis, squeezing all the organs into the smallest possible space. I attempted to get this cyst out unopened, because it is easier to separate a full cyst than a collapsed one from neighbouring structures, but, when I had nearly succeeded, it burst, several pints of dark-coloured fluid escaping. I had now to separate the rectum from a very thin and of course quite flaccid cyst-wall at the bottom of the pelvis, the two being firmly attached by the irritation of prolonged pressure, and my action being hampered by the presence of the uterus and collapsed tumours. Although I was keenly alive to the danger, an opening was made in the rectum. I got both the tumours completely out, passed the wire of a serre-nœud round the stump formed by the neck of the uterus, and cut away the parts beyond it. During the enucleation the left ureter had been exposed for about six inches, and the right for about five inches. I sewed up the tear in the rectum carefully, fixed the stump of the uterus outside the peritoneum in the lower

angle of the wound, and closed the incision, placing a rather short drainage-tube in Douglas's pouch. In spite of every effort to keep the patient warm and to sustain the heart's action she barely survived the operation.

The mass removed consisted of two ovarian cysts, containing papillomatous growth, which had developed in the broad ligaments and raised the uterus high up into the abdomen in front of and between them. Above and behind, the peritoneum was reflected from one cyst on to the other, and was completely removed from the back of the uterus.

At the autopsy the kidneys, especially the left, were dilated, but otherwise the organs were healthy. In this case the patient did not lose a great deal of blood,—not nearly so much, for instance, as was lost in the second case above related. Hence the hæmorrhage alone would not account for the death, which I attribute to shock from the extensive laceration of important structures, especially the nervous plexuses in front of the sacrum.

Such deaths as this are to be avoided by the application of artificial warmth, by wasting no time in operating, and I think in some cases by transfusion; but it does not seem yet to be settled whether it is advisable to transfuse in cases of shock. I devoted my whole attention in this case to trying to keep the patient warm and to prevent the heart from stopping. I fear that, in abdominal surgery, deaths such as this one must occasionally happen from the mere magnitude of the operation unless we are prepared to take the responsibility of refusing surgical treatment in all very dangerous cases—a course particularly to be condemned as regards cases of ovarian tumour, because recovery from the worst cases may be complete. In the case under consideration, for instance, there was nothing in the patient's history, or in the conditions found, that would have prevented her from enjoying long life if the immediate risks of the operation had been overcome; whereas if I had refused operation

death was certain, and tapping would probably have resulted in a general infection of the peritoneum by papillomatous growth.

It is, of course, impossible to say whether the result would have been favorable if I had gone on and removed the tumour at the first operation. Hæmorrhage would probably have been greater then, but the enucleation would have been rather less deep, and the condition of the kidneys was no doubt better. I think, however, it is quite possible that my mistake gave the patient two more years of life, eighteen months of which were spent in comparative comfort. Just before the exploratory operation the patient had suffered much pain in the left groin accompanied by febrile symptoms, an attack which was not specially brought under my notice till afterwards. I think the inflammation causing these symptoms had induced a fresh effusion of fluid into the left ovarian cyst, and this accounted for the great vascularity and stony hardness of this part of the tumour at that time—the conditions which chiefly led to the error in diagnosis.

I have now related all that is essential in the histories of the above cases, so as, if possible, to convey an accurate impression of the progress of each patient towards a fatal issue, and I have not attempted to minimise the importance of any accident or mistake that had occurred. I may, perhaps, be permitted to add that the conditions as observed before the operations and from day to day during the after-treatment of the cases were, in some instances, by no means so clear as they are now.

I attribute two of the deaths (Nos. 3 and 6) to shock; two (Nos. 1 and 2) primarily to obstruction of the bowels; and two (Nos. 4 and 5) to septicæmia brought about by unavoidable complications. Intestinal difficulties and septicæmia are the most important dangers of abdominal surgery. As regards the first, increasing experience confirms me in the views I have already expressed. As to septicæmia, it is a matter of special satisfaction to me

that I have not to record any case in which septic infection, followed by death from acute peritonitis within three days, has been communicated to the patient at the time of operation, as sometimes happens when no antiseptics are used, or when they are used without sufficient care. Such rapid deaths from septicæmia occur in simple cases as readily as in difficult ones, but they may be prevented with almost absolute certainty by the intelligent use of antiseptics and by a never-failing watchfulness on the part of the surgeon and his assistants as regards the patient's surroundings. Watchfulness and care should also prevent those fatalities which Mr. Mayo Robson[1] has described as "preventable,"—namely, those due to slipping of ligatures, and those due to putting patients into insanitary wards. The sanitary condition of a ward as regards the drainage of the hospital should, of course, be as perfect as it can be made. Apart from this, one of the chief safeguards against septic infection is the placing of all patients, whose peritoneums have been opened, in rooms set aside for the purpose, during convalescence. Success may often be obtained without this precaution, but no amount of statistics can overcome the fact that the peritoneum is extremely prone to contract septic inflammation. Hence, as a matter of prudence, no surgeon should run any risk, if he can possibly avoid it, of allowing his abdominal section cases to be brought into an atmosphere contaminated by the presence of a number of sick people. I repeat that under such circumstances deaths from septicæmia are as likely to occur in simple as in complex cases, and that septic peritonitis after a simple ovariotomy is a preventable disease.

Septicæmia coming on later, and due to some cause of the nature of an unavoidable complication, is more difficult to prevent; but the more clear the records of the way in which death follows operations such as I have recorded, the more likely is it that surgeons will prevent similar results in the future. I therefore venture to hope that the

[1] 'Brit. Med. Journ.,' 1894, vol. ii, p. 977.

histories I have related may help others in dealing with difficult cases, and also that valuable assistance may be obtained from the discussion which I trust will follow.

I do not wish to divert remark from any points in the cases related which may interest the Fellows, but I think it may be convenient if I suggest for discussion the following propositions which seem to be in accord with our present knowledge of the subject under consideration, and to be supported by the records I have given.

1. That in dealing with ovarian tumours it may be impossible to make an exact diagnosis, and it may be impossible to remove successfully even a non-malignant growth. Hence the selection of cases for operation, which many men profess not to make, is the most difficult and perhaps the most important duty of the surgeon in this branch of his art.

2. That septicæmia is the most common danger of abdominal surgery, but that septicæmia, in uncomplicated cases of ovariotomy, is preventable by the use of antiseptics and by care ; whereas in certain complicated cases its avoidance is difficult, and may be impossible.

3. That functional and mechanical disturbances of the bowels are the special dangers of abdominal surgery.

I would further submit for consideration that if there seems to be any possibility at all of removing an ovarian tumour with success, it is the surgeon's duty to explain clearly the circumstances of the case to the patient, and *if she then wishes it*, he should be ready to accept the responsibility of operating, even if he has but little hope as to the result, rather than leave the woman to the natural issue of her disease. The latter course is so hopeless in cases of ovarian tumour, and the matter is so much more important to the patient than to the surgeon, that if there be any uncertainty as to how to act, the patient and her friends ought to make the final decision.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. vii, p. 44.)